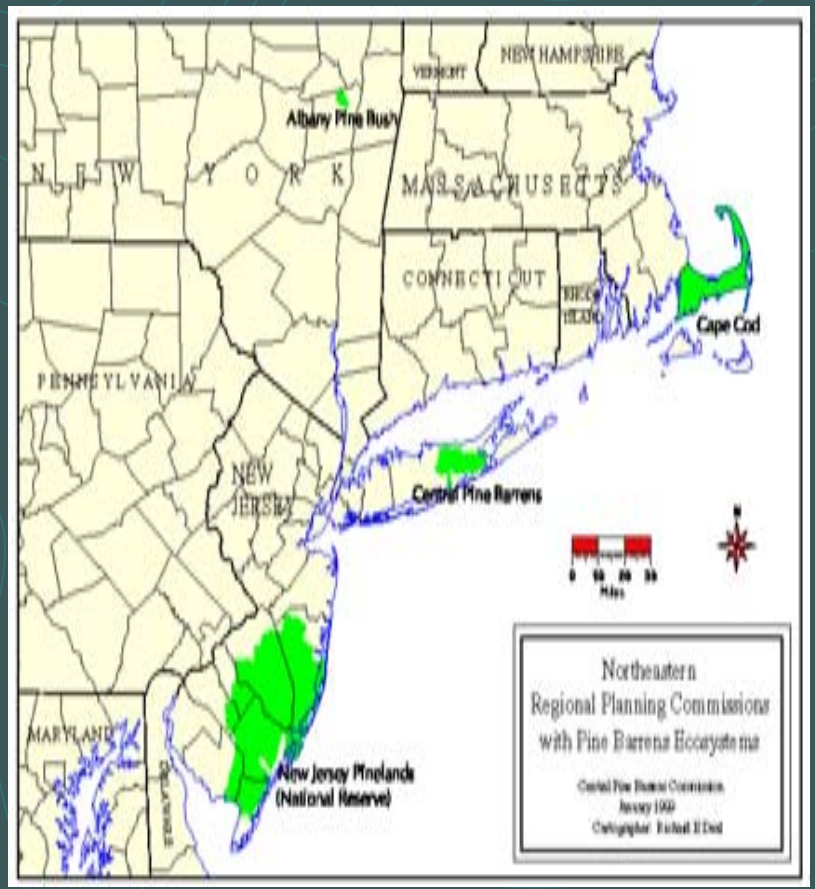
# National Fire Plan

## *NFP Project Update: Regional climate and fire danger modeling specific to the Pine Barrens*

John Hom and Ken Clark
USDA FS Northeastern Research Station
June 18, 2003

# Unique Fire Research in the Northeast




The New Jersey Forest Service has a critical need for refining the National Fire Danger Rating System so that it is specific for the pine barrens.

" It can rain in the morning and I can light it on fire in the afternoon."

David Harrison, NJ State Fire Warden, retired.

# Fire History


- 1963 Pinelands fire burned over 190,000 acres.
- In 1997, 1550 fire incidents, 4950 acres burned
- 1% by lightning, 99% is by people
- Prescribed burn 20,000 acres annually
- Wildland-Urban interface fires are now the fastest growing source of property loss.

# Revising NFDRS

- Examine alternative fuel types, alternative FDRS
- Generate past fire climate history, to get range of temperature, humidity, fuel moisture with fire
- Prescribed burns over a range of conditions (RH)
- Model the range of responses under NFDRS indices, generate response curves
- Do sensitivity analysis on critical indices- find key factors
- Implementation and testing of revised NFDRS

# Expected Products

- Historic fire climate
- Fire history maps
- Network of intensive tower and fire weather stations
- Fuel load and vegetation mapping for the pine barrens
- Prescribed burn/wildfire met monitoring
- Energy, water, and C  budget / modeling for pinelands
- Sensitivity analysis of fire danger rating system
- Refine NFDR system specific for the NJ pine barrens
- **Framework for refining NFDRS – i.e.Long Island, Cape Cod, other fuel types**

# Progress to date:

- Eastern Area Modeling Consortium (EAMC)
- Partnership with the NJ Forest Service
- Re-establish Silas Little Experimental Forest for NERS
- Partnership with Rutgers Pinelands Research Station
- Hired Fire/Flux Scientist, Dr. Ken Clark, U of Fl. , and Forest Tech., Nick Skowronski, Ft. Dix, NJ.
- funding for North Central for super computer - research modeling and met analysis at high resolution for NJ
- Design, ordering, and construction of equipment for towers and met stations

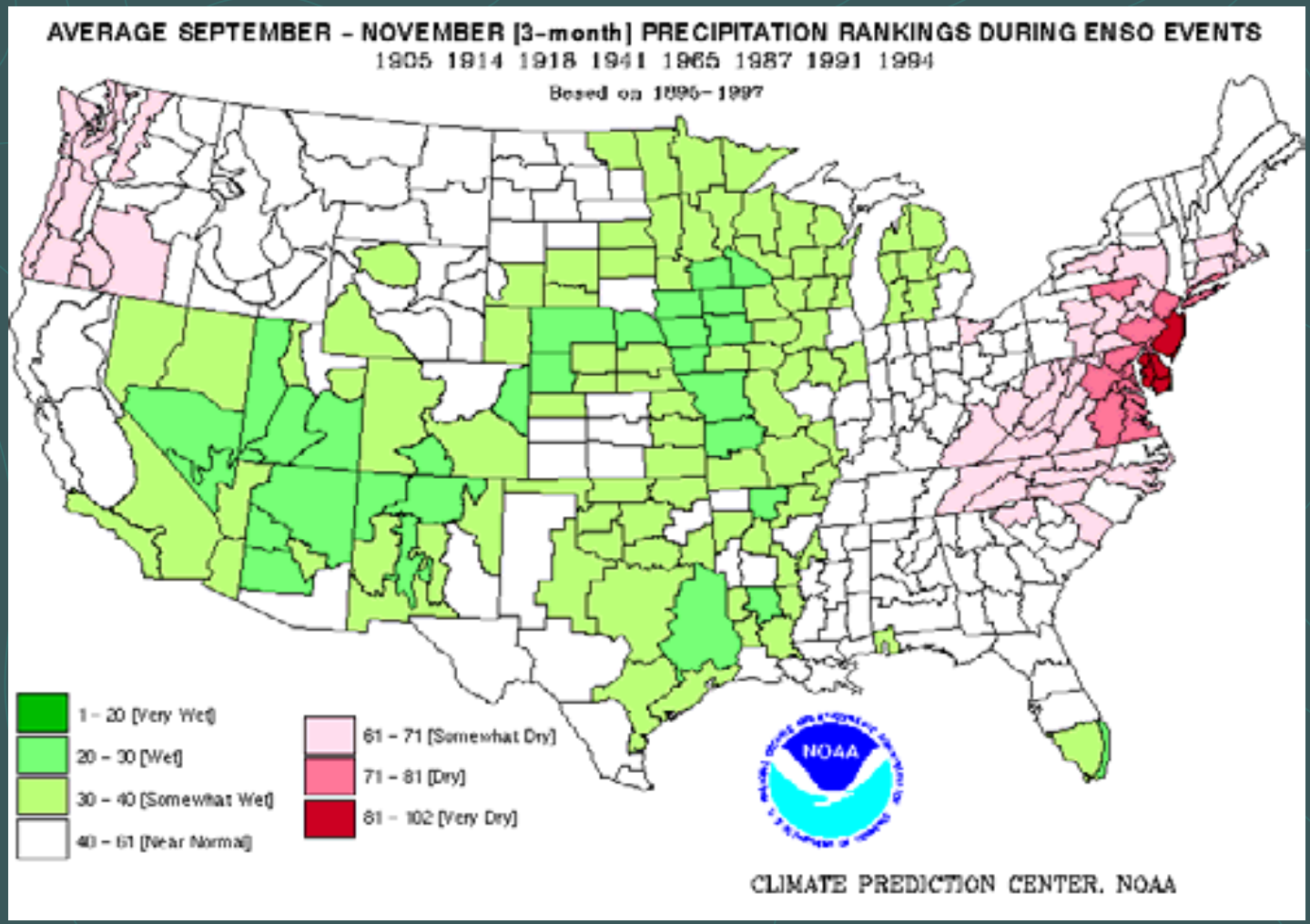
# Progress to Date: cont.

- Analysis of long term weather patterns: El Nino
- Case study on the June 2-3, 2002 Double Trouble State Park fire that burned 1300 acres, Garden St. Parkway
- Workshop on to coordinate placement of network of new fire weather stations and towers for the pine barrens region: NJ State Climatologist, NJ FS, and this NFP research program.
- Agreement for supporting real time fire weather stations from the pine barrens region using wireless modems and internet through NJ state mesonet
- Stereo photoseries for quantifying natural fuels: Pine Barrens fuel type by Vinanek and Ottmar

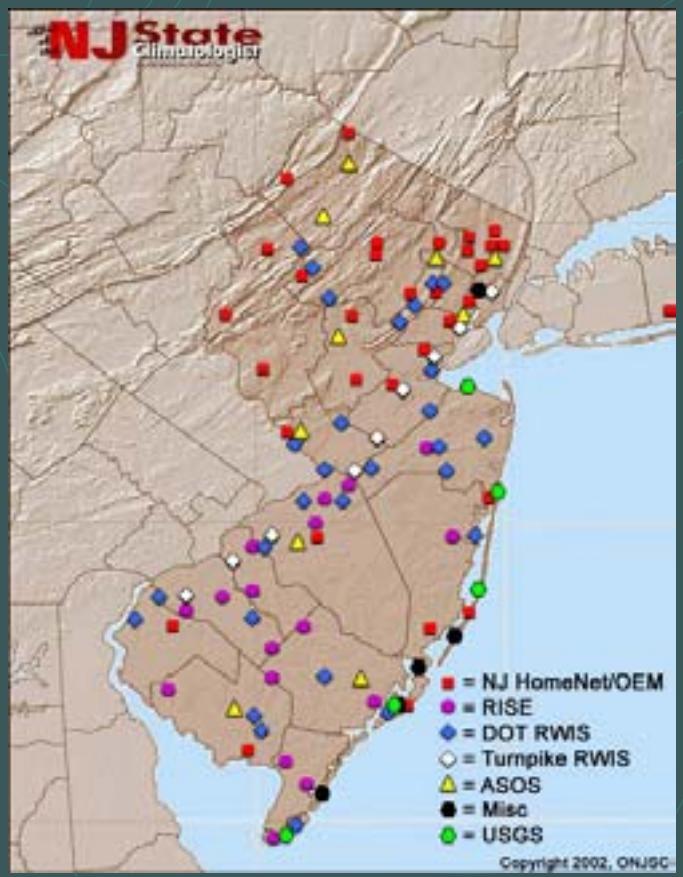
# Progress to Date: continued

- Agreement for mobile met and sodar (doppler) trailer with Rutgers University, stationed at the Pinelands field station to be used for realtime fire weather.
- Parallel study with fire and flux studies in Florida slash pine
- Agreement for LandFire remote sensing classification of fuel type and fuel loading for eastern prototype area using NJ Pine Barrens and Delaware River Basin

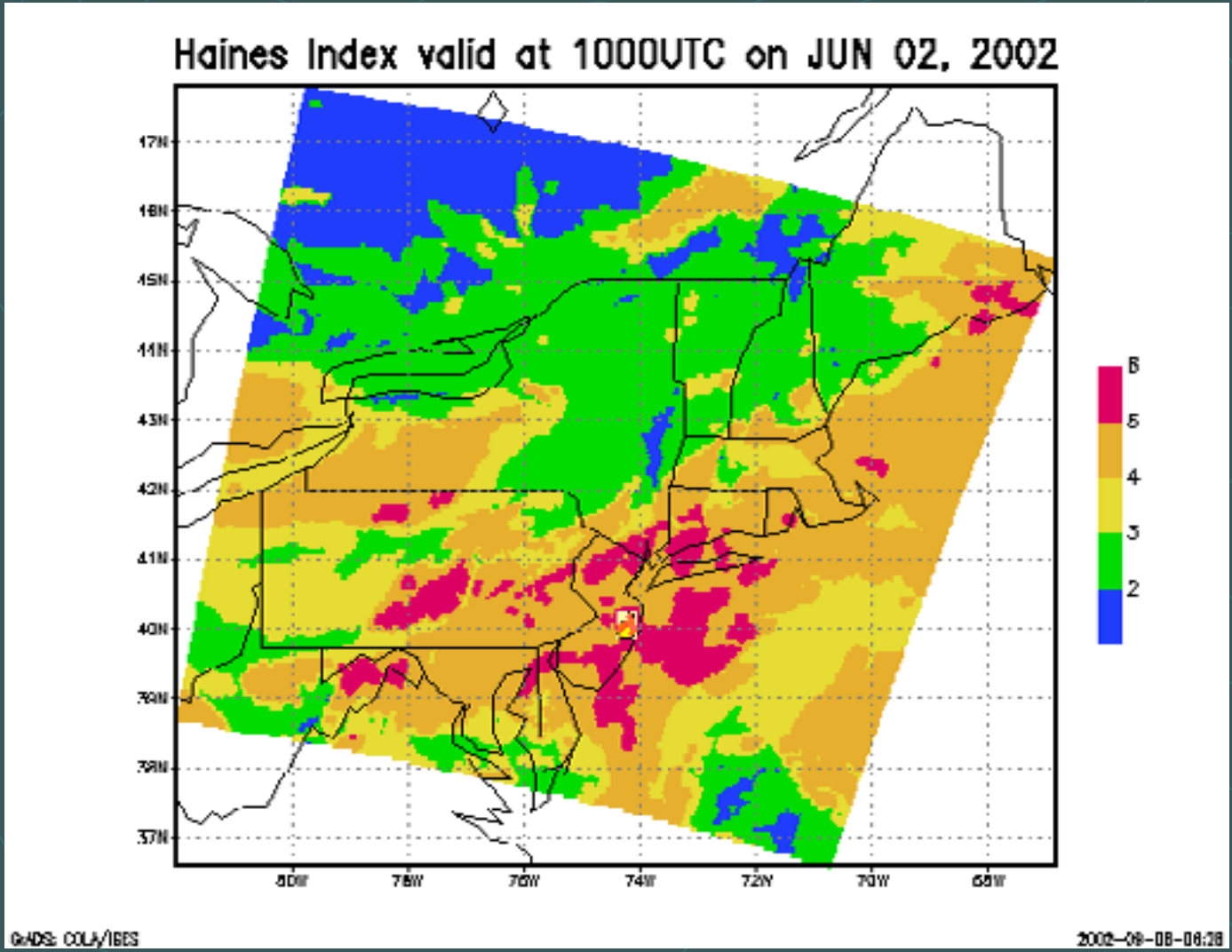
# Long Term Fire Season Prediction
# El Nino, Avg. Sept-Nov Precipatation Ranking



# Need for network of new fire weather stations in the Pine Barrens



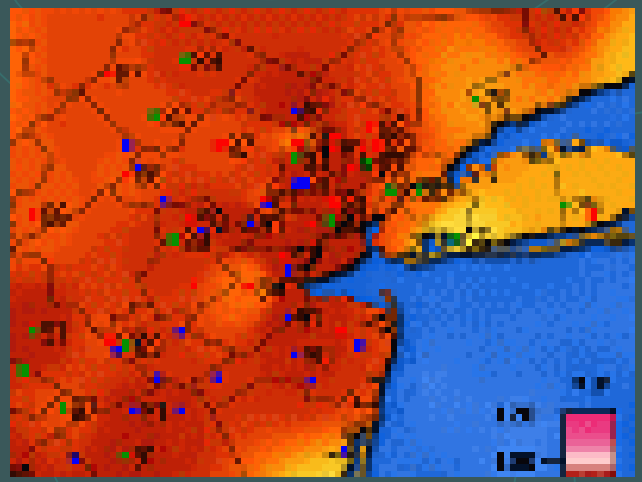

# Fire weather modeling case study: Double Trouble State Park, prediction 48 hr prior of Haines Index

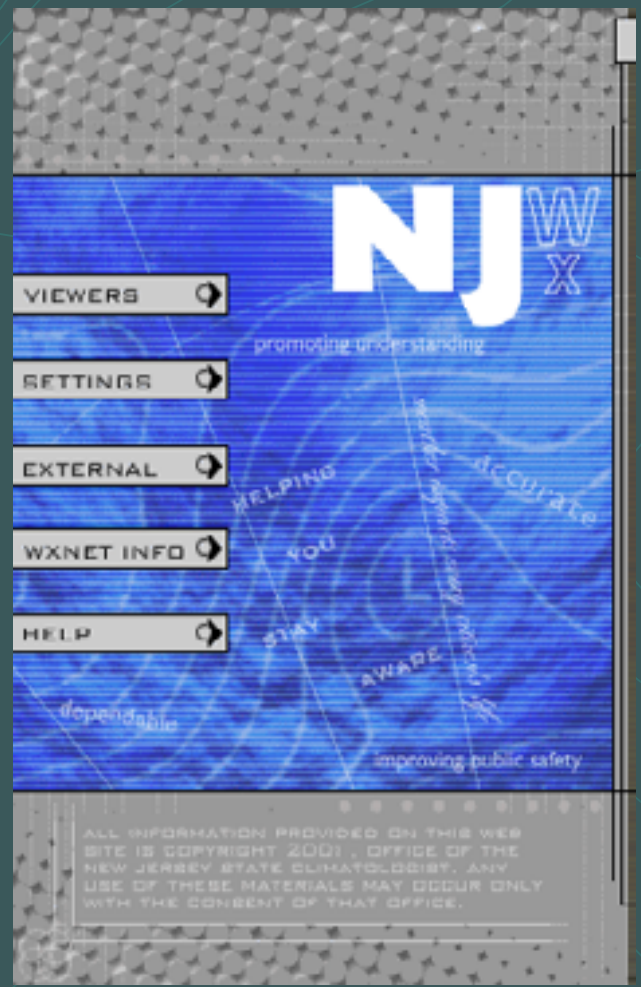


# Double Trouble State Park fire: 1300 acres
# 1 house destroyed, 9 damaged June 2-3, 2002
# Shutdown of the Garden State Parkway

# New Jersey WxNet, develop real time internet access to fire weather station data

http://climate.rutgers.edu/njwxnet/

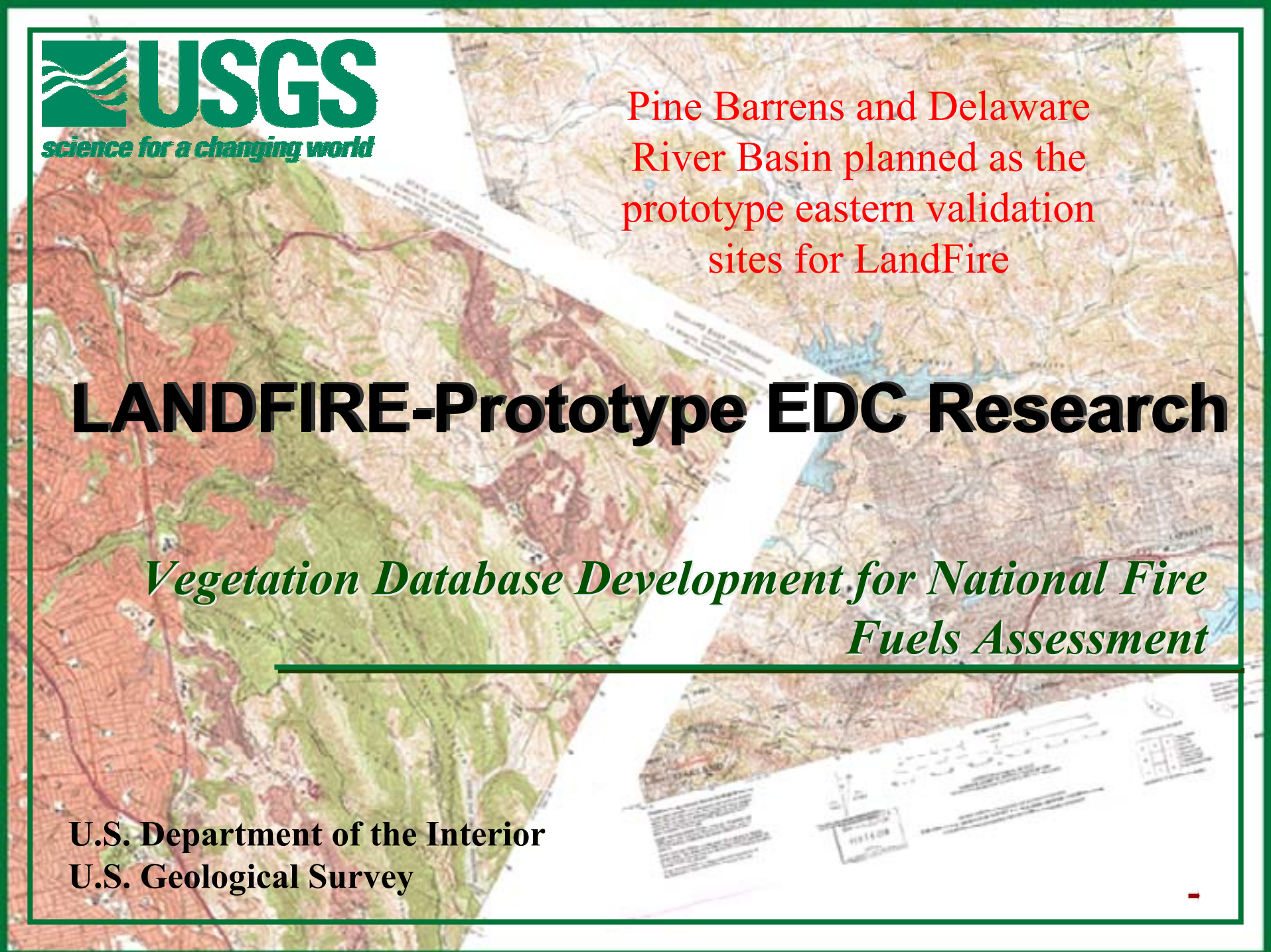




# Stereo photo series scheduled for fuel types and fuel loading for Pine Barrens

# Portable meteorological tower and sodar from Rutgers University, for use in the Pinelands Field Station, chase wildfire and prescribed burns

# Parallel Study of Fire Weather in Coastal Plains of Florida, slash pine/palmetto


USGS
science for a changing world
Pine Barrens and Delaware River Basin planned as the prototype eastern validation sites for LandFire
LANDFIRE-Prototype EDC Research
Vegetation Database Development for National Fire Fuels Assessment
U.S. Department of the Interior
U.S. Geological Survey

# Partners

- Maris Gabliks — NJ DEP State Firewarden
- Warren Heilman — NCRS fire meterologist
- Yaussy, Dickenson — NERS fire behavior modeling
- Pam Jakes — NCRS community partnerships
- David Robinson — NJ State Climatologist
- J. Dighton — Rutgers, Pinelands Field Station
  Silas Little Experimental Forest
- University of Florida, parallel study: slash pine and palmetto on coastal plain
- Northern Global Change Program, USDA Forest Service
- Eastern Area Modeling Consortium
- NERS, Northern Area, State & Private, NCRS